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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,843

02/02/2006

Susumu Noda

125714

9387

25944 7590 01/17/2007  
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EXAMINER

RAHLL, JERRY T

ART UNIT

PAPER NUMBER

2874

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,843	<b>Applicant(s)</b> NODA ET AL.	
	<b>Examiner</b> Jerry T. Rahl	<b>Art Unit</b> 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                               |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                              | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                          | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/2/06</u> | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statement (IDS) submitted on February 2, 2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### *Drawings*

2. The drawings submitted have been reviewed and determined to facilitate understanding of the invention. The drawings are accepted as submitted.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 3, 4, 8, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by International Publication WO 98/57207 to Fan et al.**

5. Regarding Claim 1, Fan et al. describes a device including a slab-shaped body (1301), a plurality of areas (1318) arranged in a lattice pattern, where the refractive index of the areas differs from that of the body, a first optical input/output section (1302) consisting of a linear defect waveguide, a second input/output section (1304) and two or more point-like defect resonators (1314, 1316) having the same resonance wavelength and arranged in series between the input/output sections.

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6. Regarding Claim 3, Fan et al. describes the point-like resonators as a donor-type defect (1306, 1308, 1310, 1312).
7. Regarding Claim 4, Fan et al. describes the second input/output section (1304) as a linear defect waveguide.
8. Regarding Claim 8, Fan et al. describes the two point-like defect resonators and the input/output sections symmetrical about a point (see Figure 13).
9. Regarding Claim 9, Fan et al. describes modified refractive index areas in the proximity of the resonators as shifted from positions of the arrangement (see Figures 13 and 16).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
12. **Claims 5 –7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al.**

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13. Regarding Claims 5-6, Fan et al. does not specifically describe the input/output waveguides having reflecting sections. However, waveguides having reflecting sections are well-known in the art for use in resonator-with-waveguide structures. At the time of invention, it would have been obvious to one of ordinary skill in the art to use such reflecting sections in the device of Fan et al. The motivation for doing so would have been to route desired outputs to a desired port.

14. Regarding Claim 7, Fan et al. describes the body formed with plural forbidden zones and modified refractive index areas forms within each forbidden band zone, the input/output sections passing through all the forbidden band zones, and the resonance wavelength of the defect resonators falling within a transmission wavelength band of the output waveguide but out of the wavelength band of the waveguide in another forbidden band zone (see Pages 22-24).

15. Regarding Claim 10, Fan et al. does not specifically describe the coupling ratio as defined in the present claims. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use such a coupling ratio, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). The motivation for doing so would have been to ensure proper coupling of the optical signals to the input/output waveguides.

**16. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fan et al. as applied to claim 1 above, and further in view of "Photon Devices Based on In-Plane Hetero Photonic Crystals" by Song, et al.**

17. Fan et al. does not specifically describe the second input/output section as a point-like defect. Song et al. describes such input/output couplers (see Figures 1A and 1B). At the time of

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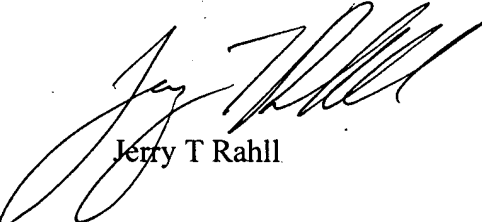
the invention, it would have been obvious to one of ordinary skill in the art to use the input/output section of Song et al. with the device of Fan et al. The motivation for doing so would have been to couple the Fan et al. device to out-of-plane components.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T. RahlI whose telephone number is (571) 272-2356. The examiner can normally be reached on M-Th (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Jerry T RahlI

  
MICHELLE CONNELLY-CUSHWA  
PRIMARY EXAMINER

1/8/07

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